ZAdDBERG, I. I.

Storage center stock piling of raw material. Moskva, Izd-vo Narkomtorgov SSSR i RSFSR, 1930. 302 p. (51-55182)

HF5349.R9Z3

GOLDSCHMIED, Aleksander; WIECKOWSKI, Wladyslaw; ZANDBERG, Hanna

Calciuria in renal diseases. Polskie arch. med. wewn. 26 no.8: 1201-1202 1956.

(KIDNEY DISEASES, urine in, calcium (Pol))
(CALCIUM, in urine, in kidney dis. (Pol))

ZANDBERG, Krystyna; DUROS, Halina

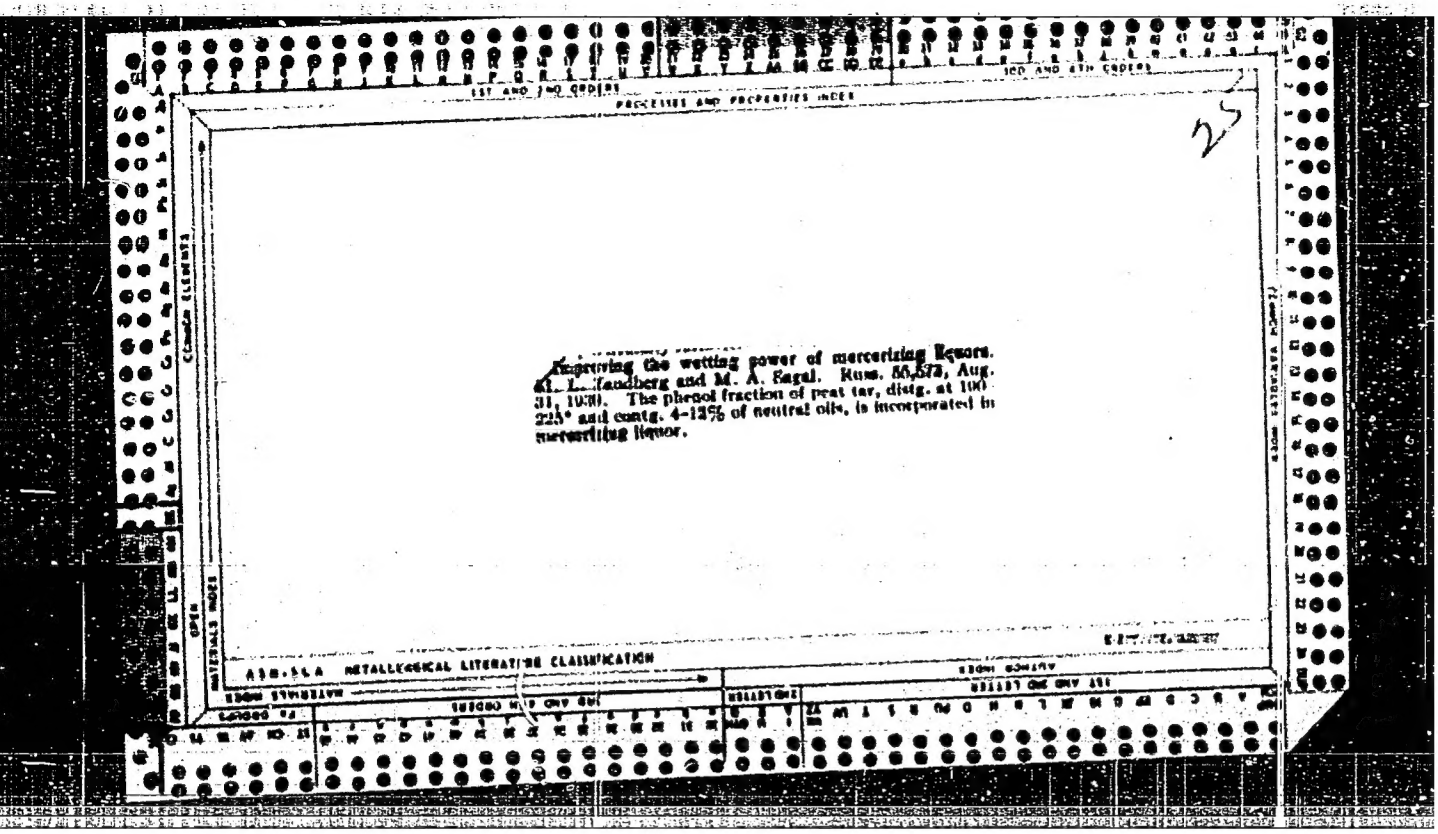
Delivery of a full-term fetus in a case of cured listerial in-. fection.. Pol. tyg.lek. 18 no.42:1571-1572 '14.0'63

1. Z Kliniki Poloznictwa i Chorob Kobiecych (kierownik: prof. dr.med. Jan Lesinski) i z Zakladu Mikrobiologii i Immunologii (konsultant: prof. dr. med. Franciszek Groer - Instytutu Matki i Dziecka w Warszawie).

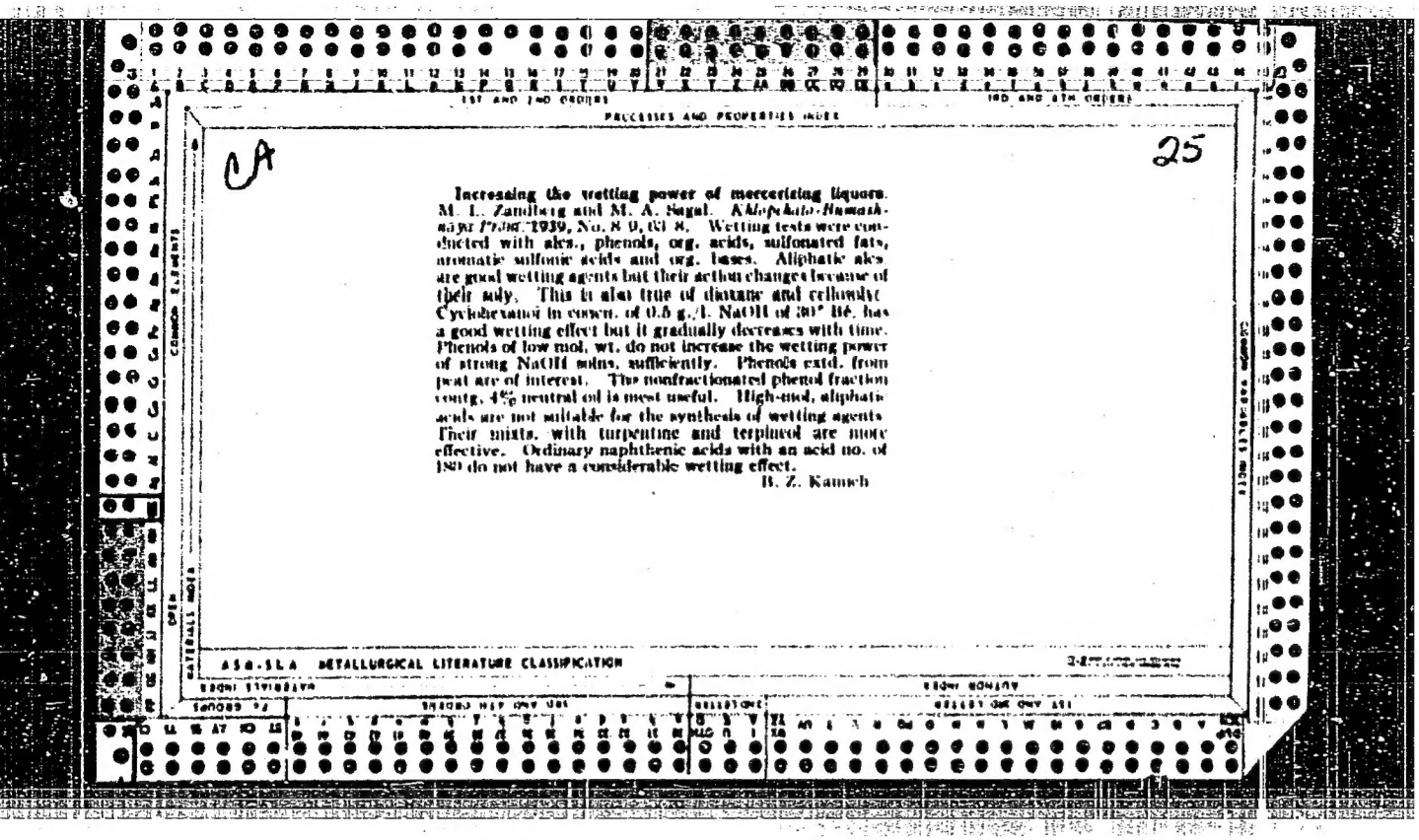
PRONIEWSKI, Jerzy; WANDBERG, Krystyna

Studies on the effect of pal[illegible]m on the course of labor. Ginek. Pol. 35 no.6:359-362 N-D '62

1. Z Kliniki Poloznictwa i Chorob Kobiecych Instytutu Matki i Dziecka w Warszawie (Kierownik: prof. dr. med. J.Lesinski).



Improving the wetting power of mercerizing liquors. M. L. Sandberg and M. A. Segal. Russ. 35,573, Aug. 31, 1930. The phenol fraction of peat tar, distg. at 100-225° and contg. 4-12% of neutral oils, is incorporated in mercerizing liquor.



CA 25

Increasing the wetting power of mercerizing liquors. M. L. Zandberg and M. A. Sagal. *Khlopchato-Bumazh-naya Prom.* 1939, No. 8-9, 61-8. Wetting tests were conducted with alcs., phenols, org. acids, sulfonated fats, aromatic sulfonic acids and org. bases. Aliphatic alcs are good wetting agents but their action changes because of their adly. This is also true of dioxane and cellosolve. Cyclohexanol in concn. of 0.5 g./l. NaOH of 30° Bé. has a good wetting effect but it gradually decreases with time. Phenols of low mol. wt. do not increase the wetting power of strong NaOH solns. sufficiently. Phenols extd. from peat are of interest. The nonfractionated phenol fraction contg. 4% neutral oil is most useful. High-mol. aliphatic acids are not suitable for the synthesis of wetting agents. Their mixts. with turpentine and terpineol are more effective. Ordinary naphthenic acids with an acid no. of 189 do not have a considerable wetting effect.

B. Z. Kamush

ZANDBERG, S., starshiy khudozhnik-model'yer

Spring and summer fashions. Mest.prom. i khud.promys. 2 no.3:38-39 Mr '61. (MIRA 14:4)

1. TSentral'naya opytno-tekhnicheskaya shveynaya laboratoriya Gosudarstvennogo Komiteta Soveta Ministrov RSFSR po delam mestnoy promyshlennosti i khudozhestvennykh promyslov.
(Fashion)

VAYNER, Sh.A., inzh.; ZANBERG, S.A., inzh.

Double-coordinate photo-tracking system for automatic welding machines. Svar. proizv. no.3:26-27 Mr '61. (MIRA 14:3)

1. Stalingradskiy nauchno-issledovatel'skiy institut tekhnologii machinostroyeniya (for Vayner) 2. Stalingradskiy zavod im. Petrova (for Zandberg).
(Electric welding--Equipment and supplies)

ZANDBERG, S. A.

PHASE I BOOK EXPLOITATION SOV/5078

Akademiya nauk URSR, Kiyev. Instytut elektrozvaryuvannya

Vnedreniye novykh sposobov svarki v promyshlennost'; sbornik statey. Vyp. 3. (Introduction of New Welding Methods in Industry; Collection of Articles. v. 3) Kiyev, Gos. izd-vo tekhn. lit-ry UkrSSR, 1960. 207 p. 5,000 copies printed.

Sponsoring Agency: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni akademika Ye. O. Patona Akademii nauk Ukrainskoy SSR.

Ed.: M. Pisarenko; Tech. Ed.: S. Matusevich.

PURPOSE: This collection of articles is intended for personnel in the welding industry.

COVERAGE: The articles deal with the combined experiences of the Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton) and several industrial enterprises in solving scientific and engineering problems in welding technology. Problems in the application of new methods of mechanized welding and electroslag welding in industry are discussed. This is the third collection of articles published under the same title. The Foreword was written by B. Ye. Paton, Academician of the Academy of Sciences Ukrainian SSR and Lenin prize winner. There are no references.

TABLE OF CONTENTS:

ZANDBERG, S.A.

25(1) PHASE I BOOK EXPLOITATION SOV/3421

Akademiya nauk UkSSR, Kiyev, Institut elektrosvarki imeni akademika Ye.O. Patona

Vnedreniye novykh sposobov svarki v promyshlennost', vyp. 2 (Introduction of New Welding Methods in Industry; Collection of Articles, No. 2) Kiyev, Gos. izd-vo tekhn. lit-ry Ukrainskoy SSR, 1959. 194 p. Errata slip inserted. 3,000 copies printed.

Ed.: V. Gurkuzha; Tech. Ed.: S. Matusevich.

PURPOSE: This book is intended for workers in the welding industry.

COVERAGE: The book contains a discussion of welding techniques and problems by groups of scientists and welders. Much attention is given to problems in the application of new methods of mechanized welding and electro-slag welding. This is the second collection of articles under the same title prepared and published by the Institut elektrosvarki imeni Ye.O. Patona (Institute of Electric Welding imeni Ye.O. Paton). The preface is written by B.Ye. Paton, Academician of the Ukrainian Academy of Sciences and Winner of the Lenin Prize. There are no references.

Kazimirov, A. A. [Candidate of Technical Sciences; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)], and V. F. Zabotin [Chief Engineer; Khersonskiy sudostroitel'nyy zavod (Kherson Shipbuilding Plant)]. Automatic Welding in Shipbuilding 124

Vakhnin, Yu. N. [Engineer], B. S. Kasatkin [Candidate of Technical Sciences], B. I. Lakhovskiy [Candidate of Technical Sciences], A. M. Ponizovtsev [Engineer; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)], S. I. German [Candidate of Technical Sciences, Chief of Welding Laboratory; Khar'kovskiy turbinnyy zavod imeni S. M. Kirova (Khar'kov Turbine Plant imeni S. M. Kirov)], and Z. L. Klimovitskiy, Chief of Welding Section; Bryanskiy mashinostroitel'nyy zavod (Bryansk Machinery Plant)]. Carbon-dioxide Shielded Welding in Production of Steam Turbines 137

Zaruba, I. I. [Candidate of Technical Sciences], and A. G. Potap'yevskiy [Senior Engineer; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)]. Introduction of Automatic and Semi-automatic Carbon-dioxide Shielded Welding 148

Medovar, B. I. [Candidate of Technical Sciences], A. G. Potap'yevskiy [Senior Engineer; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)], F. A. Ratin [Senior Engineer], S. V. Tunger, Supervisor of the Welding Laboratory; Stalingradskiy filial Giproneftemash (Stalingrad Branch of State Design and Scientific Research Institute for Petroleum Machinery)], and S. A. Zandberg [Chief of Welding Office; Stalingradskiy mashinostroitel'nyy zavod imeni Petrova (Stalingrad Machinery Plant imeni Petrov)].
Development and Introduction of New Technique in Automatic Submerged-arc Welding of Two-ply Steel With Stainless Chromium Facing 157

Zvonkov, M.I. [Engineer] D. M. Rabkin [Candidate of Technical Sciences; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)], V. A. Verchenko, [Engineer; trest "Prodmontazh" (Production Assembly Trust)], and I. M. Mirgorodskiy [Chief Engineer; zavod "Bol'shevik" ("Bol'shevik" Plant)]. Experience Gained in Welding Containers Made of Aluminum and Its Alloys 173

Asnis, A. Ye. [Candidate of Technical Sciences; Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton)], N. G. Gavrilenko [Engineer], A. V. Prokhorov [Engineer; Zhdanovskiy zavod imeni Il'icha (Plant imeni Il'ich in Zhdanov), and S. V. Tunger [Engineer; Stalingradskiy filial Giproneftemash (Stalingrad Branch of State Design and Scientific Research Institute for Petroleum Machinery)]. High-strength Steels for Weldments 183

AVAILABLE: Library of Congress (TS 227.A359)

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1.5400

S/135/61/000/003/008/014
A006/A001

28.1060 1068, 1089, 1132

AUTHORS: Vayner, Sh. A., Zandberg, S. A., Engineers

TITLE: A Two-Coordinate Photo-Tracking System of an Automatic Welding Machine

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 3, pp. 26-27

TEXT: In the electric arc welding of circumferential seams on large-size apparatus, due to the oval shape of the containers and the inaccurate leveling of the support, the necessity arises of developing the automatic control of the welding head position in respect to the work piece. The Stalingradskiy nauchno-issledovatel'skiy institut tekhnologii mashinostroyeniya (Stalingrad Scientific Research Institute of the Machinebuilding Technology) together with the Stalingrad Plant imeni Petrov developed for this purpose a two-coordinate photo-tracking system using a bright line for guidance. The line is applied with chalk or an aluminum pencil on the work piece using a special pattern. The system is used on the AEC (ABS) type automatic welding machine (Fig. 1). Its schematic diagram is given in Figure 2. The device consists of two closed automatic circuits, controlling the vertical and horizontal motion of the welding machine. A special photo-head serves as a deflection pickup issuing two independent error signals which

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A Two-Coordinate Photo-Tracking System of an Automatic Welding Machine

correspond to the vertical and horizontal deflection of the nozzle in respect to the seam. The sinal of horizontal deflection is transmitted to amplifier Y_x. The increased voltage of the signal is transmitted to phase inverter FB, converting the amplitude changes of the signal into corresponding phase shifts. The voltage converted is used to control reversible ion drive D_x of the horizontal travel. Non-balance voltage corresponding to the vertical deflections of the nozzle, are transmitted through amplifier Y_x to relay unit IB_r controlling servo-drive D_g, which shifts burner SG vertically to the required magnitude. Each tracking system is equipped with indicator devices IN_x and IN_z. The operational system of the photo-electric head is shown in Figure 3. (Author's certificate No. 665358/24 with priority from November 19, 1960). The photo-electric head is arranged along the bright line in such a manner that the underlight is in plane Y, perpendicular to the drum axis. This arrangement assures the separate reception of the error signal components along axes X and Z. A 65° angle between the photo-electric head and the underlight reproduces the bright line more distinctly. In case of deflection from axis X the bright line switches from the central position over to one of the photo-electric resistances (A or B) changing their illuminance.

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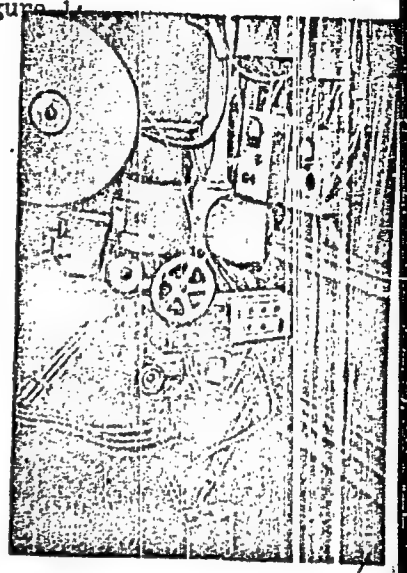
A006/A001

A Two-Coordinate Photo-Tracking System of an Automatic Welding Machine

In case of deflection from axis Z, the illuminated section of the line is displaced in respect to the photo-electric head axis, changing the illuminance of photo-electric resistances C or D. Both the resistances are sensitive elements of two a-c bridges, whose non-balance voltages depend on the shift and whose phases depend on the shift sign. The bridges are power supplied from a step-up transformer with a permalloy core. Tests made with the tracking system proved its reliability. The use of the aluminum pencil and the special pattern for the lay-out simplifies the application of the bright line. The use of such systems reduces rejects due to shifing of the seam, facilitates operations and raises labor efficiency.

Figure 1:
General view of ABC (ABS) automatic machine with photo-tracking system

Figure 1.



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S/135/61/000/003/008/014
A006/A001

A Two-Coordinate Photo-Tracking System of an Automatic Welding Machine

Figure 2:
Schematic diagram of the tracking system

Figure 3:
Operational principle of the photo-electric head

There are 3 figures.

ASSOCIATIONS: SNIITMASH (Vayner); Stalingradskiy zavod imeni Petrova (Stalingrad Plant imeni Petrov) (Zandberg).

Figure 2:

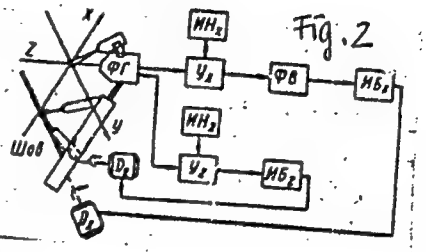
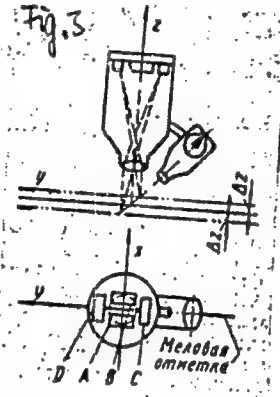


Figure 3:



Card 4/4

VAYNER, Sh.A., inzh.; VAYNER, S.A., inzh.; USOL'TSEV, V.A., inzh.; FOKIN, V.M., inzh.; SOTSKOV, N.I., inzh.; ZANDBERG, S.A., inzh.; SIGAREV, V.S., inzh.; BRONSHTEYN, L.M., inzh; YUNGER, S.V., kand. tekhn. nauk; BATYREV, A.V., inzh.; BODYAKIN, Yu.F., inzh.; RYZHKOV, N.I., inzh.; YAKHNIN, A.L., inzh.; FRIDKIS, Z.I., inzh.

Furnishing the SGU gas-cutting machine with a FOS-4 scale photocopying control system. Svar. proizv. no.9:34 S '65. (MIRA 18:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tekhnologii mashinostroyeniya (for Sh.Vayner, S.Vayner, Usol'tsev, Fokin, Sotskov). 2. Volgogradskiy zavod im. Petrova (for Zandberg, Sigarev, Bronshteyn). 3. VPTI khimnefteapparatury (for Yunger, Batyrev, Bodyakin). 4. Ural'skiy zavod tyazhelogo mashinostroyeniya imeni Sergo Ordzhonikidze (for Ryzhkov, Yakhnin, Fridkis).

MAKARA, A.M.; ISKRA, A.S.; YEGOROVA, S.V.; YUNGER, S.V.; GORKUNENKO, G.N.; NIKUYKO, N.A.; ZANDBERG, S.A.; BRONSHTEYN, L.M.

Technology of electric slay welding of petroleum refining and chemical apparatus without normalization. Avtom. svar. 18 no.5:11-16 My '65. (MIRA 18:6)

1. Institut elektrosvarki im. Ye.O. Patona AN UkrSSR (for Makara, Iskra, Yegorova). 2. VPTIkhimnefteapparatury (for Yunger, Gorkunenko, Nikuyko). 3. Volgogradskiy zavod im. Petrova (for Zandberg, Bronshteyn).

SOV/137-59-3-5854

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 130 (USSR)

AUTHOR: Zandberg, S. A.

TITLE: Automatic Welding of Small-diameter Vessels
(Avtomaticheskaya svarka sosudov malykh diametrov)

PERIODICAL: Stalingr. prom-st' (Sovnarkhoz Stalingr. ekon. adm. r-na), 1958, Nr 2-3, pp 18-21

ABSTRACT: A description of the practice of automatic welding of small-diameter vessels utilizing standard and modernized equipment at the im. Petrov plant. Welding operations involve the employment of pneumatically operated elastic flux containers, backing rings which remain in the vessel, and finishing welding operations performed manually. At the present time automatic welding is employed in the manufacture of vessels 200 mm in diameter or greater. Research is being conducted on automatic girth welding of vessels 60-170 mm in diameter. Welding procedures and cost data for the process are presented.

Yu. K.

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SOV/137-59-3-5871

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 133 (USSR)

AUTHORS: Zandberg, S. A., Zimin, V. P.

TITLE: Automatic Welding of Reactor Tubing in a CO_2 Medium (Avtomaticheskaya svarka reaktornykh trubok v atmosfere uglekislogo gaza)

PERIODICAL: Stalingr. prom-st' (Sovnarkhoz Stalingr. ekon. adm. r-na), 1958, Nr 5, pp 11-13

ABSTRACT: The operation of welding of ribs to reactor tubes (60x4.5 mm and 7500 mm long), originally performed at the im. Petrov plant with the aid of TsM-7 electrodes, is now performed automatically with a Sv10GS welding wire 1.5-2 mm in diameter in a medium of CO_2. The apparatus is equipped with a traveling mechanism of the type TS 17 M, a duplicating head, and a shortened shielded hose from a semiautomatic unit PSh-54. Welding is performed under the following conditions: Current intensity 490-500 a; arc potential 24-26 v; speed of welding 126 m/hr; rate of feed of the welding wire 307 m/hr; consumption of gas: 20 liters/hr. The apparatus is powered by a PS-500 generator with smooth "surge-and-dip" characteristics. The food-industry CO_2 employed is dried by silica gel. The CO_2 is

Card 1/2

VAYNER, Sh.A., inzh.; ZAMYATKO, S.A., inzh.; VAYNER, S.A., inzh.; SHKURKO, M.F., inzh.; FOMIN, V.N., inzh.; POBEREZKIN, L.A., inzh.; GOLOLOBOV, V.A., inzh.; USHKOV, G.G., inzh.

The FOS-1sh automatic gas cutting machine. Svar. proizv. no.4:39-40 Ap '65. (MIRA 18:6)

AUTHORS: Yunger, S.V., Zandberg, S.A. SOV/125-58-11-15/16

TITLE: The Automatic Welding of Reactor Tubes in Carbon Dioxide (Avtomaticheskaya svarka reaktornykh trubok v srede uglekislogo gaza)

PERIODICAL: Avtomaticheskaya svarka, 1958, Nr 11, pp 90-94 (USSR)

ABSTRACT: The Giproneftemash plant and the Petroleum Machine Building Plant, under the supervision of engineers V.S. Salimon, V.S. Shchekoldin and V.P. Zimin, have developed the mechanized production of "KT-131" reactor tubes with the use of welding in carbon dioxide. Information is given on the devices used including a simple welding stand, a special copying head, a "TS-17M" type tractor and a modernized "GS-500" type generator. The automatic welding in CO_2 of tubes, produces a high quality of seam, and the welding rate is 126 m/hour. The new method provides higher work efficiency and improves work conditions for the operator.

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SOV/125-58-11-15/16

The Automatic Welding of Reactor Tubes in Carbon Dioxide

There are 2 photos and 3 diagrams.

ASSOCIATION: Stalingradskiy filial Giproneftemasha i zavod Neftyanogo mashinostroyeniya im. Petrova (The Stalingrad Branch of Giproneftemash and the Plant of Petroleum Machine Building imeni Petrov)

SUBMITTED: June 12, 1958

Card 2/2

YUNGER, S.V.; ZANDBERG, S.A.

Automatic welding of reactor tubes in an atmosphere of carbon dioxide. Avtom. svar. 11 no.11:90-94 N '58. (MIRA 11:12)

1.Stalingradskiy filial Gosudarstvennogo nauchno-issledovatel'skogo i proyektnogo instituta neftyanogo mashinostroyeniya i Zavod neftyanogo mashinostroyeniya im. Petrova.
(Electric welding) (Protective atmospheres)

TSATSKO, L.. Prinimali uchastiye: DELOV, V.N.; BEGMA, G.P.; ZANDBERG, Ya.N.; BOGUSLAVSKIY, D., red.; BERGER, K., red.; YUNOVSKIY, Ye., tekhn.red.

[Capital construction and planning; a collection of legislative enactments and instructions] Kapital'noe stroitel'stvo i proektirovanie; sbornik zakonodatel'nykh i instruktivnykh materialov. Kiev, Gos.izd-vo lit-ry po stroit. i arkhit. USSR, 1958. 713 p. (MIRA 12:5)

(Building laws)

ZANDER, F. A.

SEE: TSANDER, F. A.

RYLSKI, Leszek; PAC-POMARNACKA, Elzbieta; STRUPCZEWSKA, Elzbieta; KROBJILOWSKA, Magdalena; ZANDER, Krystyna

Synthesis of some amino derivatives of 2-phenethylamine.
Acta Pol. pharm. 22 no.3:197-201 '65.

1. Z Zakladu Technologii Chemicznej Srodkow Leczniczych Akademii Medycznej w Gdansku (Kierownik: doc. dr. L. Rylski).

ZANDER, N.V.

Simultaneous action of calcium and potassium chlorides on the frog muscle tissue in different seasons. TSitologiia 4 no.2:204-208 Mr-Ap '62. (MIRA 15:8)

1. Laboratoriya fiziologii kletki Fiziologicheskogo instituta pri Leningradskom universitite.
(POTASSIUM CHLORIDE—PHYSIOLGICAL EFFECT)
(MUSCLE) (CALCIUM CHLORIDE—PHYSIOLOGICAL EFFECT)

USHAKOV, B.P.; ZANDER, N.V.

Thermal adaptation of muscle fibers of the lake frog (Rana ridibunda) inhabiting warm springs. Biofizika 6 no.3:322-327 '61. (MIRA 14:6)

1. Biologo-pochvennyy fakul'tet Leningradskogo gosudarstvennogo universiteta imeni A.A.Zhdanova i Institut tsitologii AN SSSR, Leningrad.

(MUSCLE) (TEMPERATURE--PHYSIOLOGICAL EFFECT)
(FROGS)

ZAIDER, M.V.

Influence of chlorides of alkali metals on the rest potential of the skeletal muscle of a frog. TSitologiia 1 no.3:285-288 My-Je '59. (MIRA 12:10)

1. Laboratoriya fiziologii kletki Fiziologicheskogo instituta pri Leningradskom universitete.
(CHLORIDES--PHYSIOLOGICAL EFFECT) (MUSCLE)

SUZDAL'SKAYA, I.P.; ZANDER, N.V.

Sorption of dyes by the muscle tissue of hot-blooded animals exposed to high temperatures. Fiziol. zhur. 49 no.2:249-257 F'64 (MIRA 17:3)

1. Laboratoriya fiziologii kletki Fiziologicheskogo instituta Gosudarstvennogo universiteta, Leningrad.

KRONITIS, Yan Yanovich [Kronitis, J.]; ZANDER, R., spets. red.; SPRIVULIS, Z., red.; MIRONOV, A., tekhn. red.

[Manual for collective farm foresters] Spravochnik kolkhoznogo lesovoda. Perevod so 2-go izd. Riga, Latviiskoe gos. izd-vo, 1959. 446 p. (MIRA 14:10)

(Collective farms) (Foresters)

ACCESSION NR: AT4042301 S/0000/63/003/000/0243/0253

AUTHOR: Grinberga, D.A., Zandart, Ya, Ya.; Zander, Yu. K., Laumanis, I. Ya

TITLE: Investigation of an experimental DC conduction pump

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga, 1962. Voprosy* magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady* soveshchaniya, v. 3. Riga, Izd-vo AN LatSSR, 1963, 243-253

TOPIC TAGS: conduction pump, direct current pump, pump testing

ABSTRACT: The authors have designed the experimental mercury system shown in Figure 1 of the Enclosure for the purpose of verifying the theory of DC compensation-type conduction pumps. The pump model to be tested 5 (Figure 1) is connected in series with pump 1 through valve 4, connecting tubes 2 and Venturi tube 7. The purpose of pump 1 is to compensate for the loss of pressure in the internal hydraulic circuit. The useful pressure, developed by the test pump 5 in the internal hydraulic circuit, is measured by means of mercury manometers 6, while the speed of the liquid metal is measured (in order to determine the productivity Q) by means of the Venturi tube. The authors note that the channel and the windings of the magnet of the pump to be tested

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ACCESSION NR: AT4042301

can be connected both in series and independently. Graphs are presented illustrating the P_aQ and η_aQ characteristics of a test model of a compensating pump with series and with independent excitation. Formulas are given for the maximum values of the pressure p_{1m} and productivity Q_m. There is a discussion of the voltage U in the channel as a function of the productivity Q. A method is proposed for dividing the boundary current I_v into the so-called intrapolar current I_p and extrapolar current I_a. For the purpose of comparing the derived experimental data with the theory, the authors employed the calculation method proposed by Watt (Watt, D. A., O'Connor, R. J., and Holland E., Tests on an experimental d-c pump for liquid metals.Harwell, 1957; Watt, D.A. Analysis of experimental d-c pump performance and theory of design, Harwell, 1957). The results are analyzed from the point of view of agreement or lack of agreement between experimental and theoretical information. "The work was carried out under the supervision of Yu. A. Birzvalk (Cand. in the Tech. Sci.). Orig. art. has: 5 figures and 17 formulas.

ASSOCIATION: none

SUBMITTED: 04Dec63 ENCL: 01 SUB CODE: IE, EE

NO REF SOV: 002 OTHER: 002

Card 2/3

ACCESSION NR: AT4042301 ENCLOSURE: 01

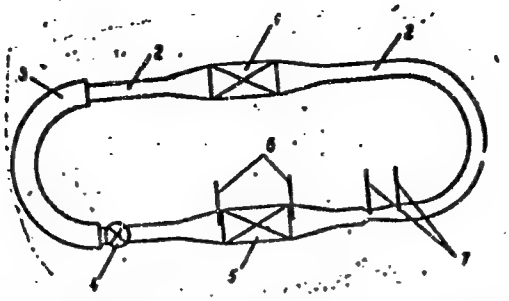


Fig. 1. Diagram of mercury system: 1 - auxiliary (or compensating) pump; 2 - necting tubes; 3 - cooler, encompassing connecting tube 2; 4 - valve; 5 - pump to be tested; 6 - mercury manometers for the measurement of P_a; 7 - Venturi tube manometers.

Card 3/3

SOURCE: Prikladnaya gidrodinamika i teoriya uprugosti, no. 22, 1965, 122

TOPIC TAGS: pump, direct current, conductive fluid, magnetic pumping, ferromagnet

ASSOCIATION: none

SUBMITTED: 12Jun64 ENCL: 01 SUB CODE: IE

ACCESSION NR: AP5019102 ENCLOSURE: 03

1- electrically conductive liquid; 2- cylindrical duct;

KIPENS, Reinhods; ZANDERS, J., red.; PASTARE, D., tekhn. red.

[Radio physics] Radiofizika. Riga, Latvijas Valsts izdevnieciba, 1962. 281 p. (MIRA 16:4)
(Radio)

PLAUDE, K.; MAZURS, J.; PUTNINS, K.; ZANDERS, J., red.; FREIMANIS, V., tekhn. red.

[Development of Latvian power engineering within the electric power system of the U.S.S.R.] Latvijas energetikas attistiba PSRS energosistema. Riga, Latvijas Valsts izdevnieciba, 1961. 98 p. (MIRA 15:3)

(Interconnected electric systems)
(Latvia--Power engineering)

ZANDERS, Roberts; ZUKOVS, L. red.; PAEGLIS, J., tekhn. red.

[Development of forest management in the Latvian S.S.R. during the last 20 years]Latvijas PSR mezsaimniecibas un mezrupniecibas attistiba 20 gados. Riga, Tehniskas informacijas centralais birojs, 1960. 33 p. (MIRA 15:8)
(Latvia--Forest management)

KALNIN'SH, A.[Kalnins, A.]; ZANDERSON, Ya.[Zandersons, J.]

Resin content in the sapwood of turpentined pine trees. Vestis Latv ak no.6:143-152 '61.

1. Akademiya nauk Latviyskoy SSR, Institut lesokhozyaystvennykh problem i khimii drevesiny.

(Gums and resins) (Pine)

OKONOV,Z.V.; ZANDERSONS,J.; KALNINS, A.; ZHUKOVS, L., red.; PAEGLIS, J., tekhn. red.

[Automatic machine for manufacturing staples. Increasing the extraction of resin by utilizing the wood around injured areas of tapped pines] Automats skavu izgatavosanai. Sveku ieguves paplasinasanai var izmantot ari atsvekotu priezu brucu koksnes svekus by J.Zandersons, A.Kalnins. Riga, Tehniskas informacijas centrlais birojs, 1960. 11 p. [In Latvian translated from the Russian] (MIRA 14:12)
(Staples and stapling machines) (Turpentining)

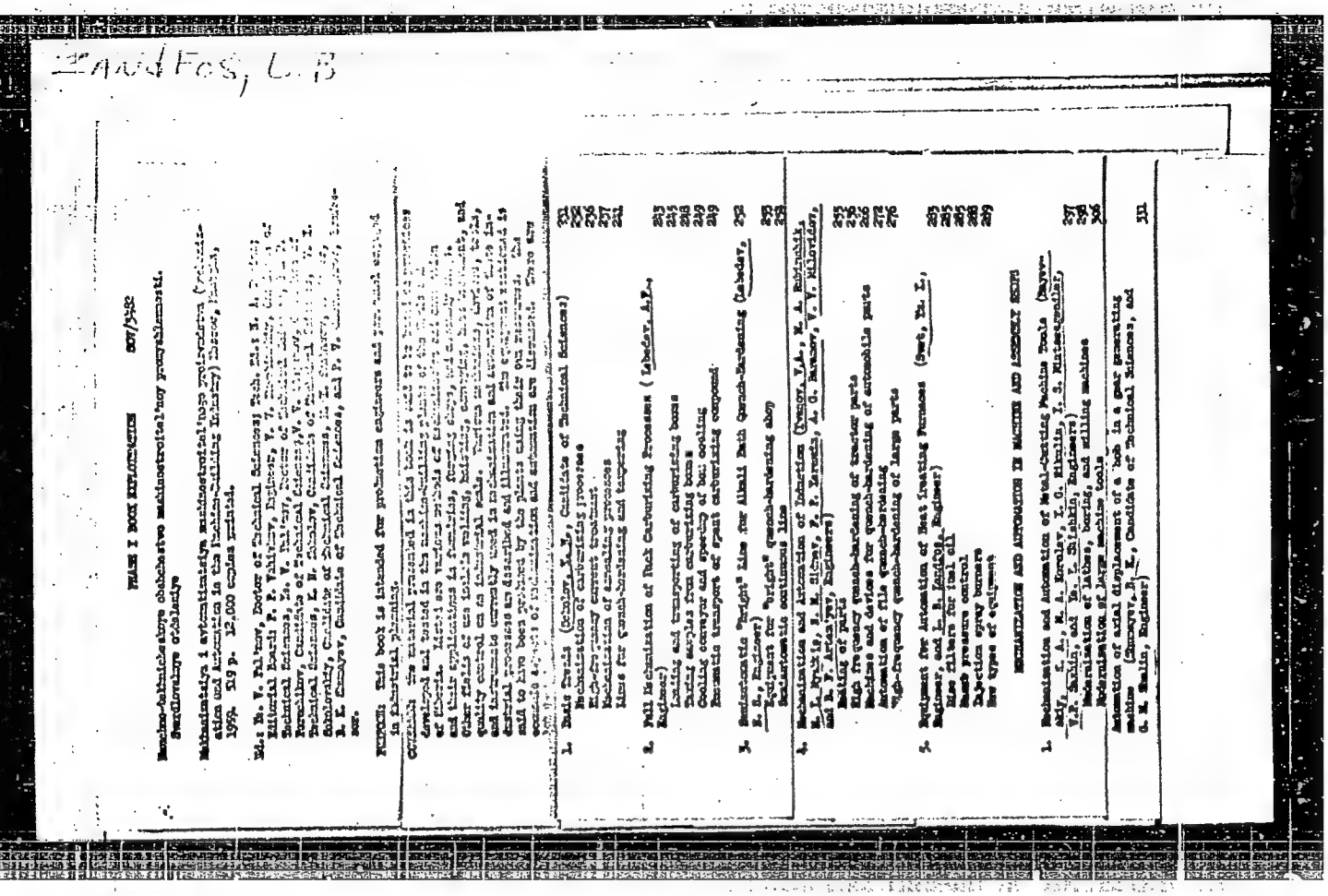
KALNIN'SH, A. [Kalnins, A.]; ZANDERSON, Ya. [Zandersons, J.]

Resinification of wood during th tapping of Scotch pine by chemical stimulation using sulfuric acid. Izv.AN Latv.SSR no.6:109-118 '63. (MIRA 17:4)

1. Institut lesokhozyaystvennykh problem i khimii drevesiny AN LatvSSR.

ZANDERSON, Ya. [Zandersons, J.]

All-Union Technological Conference on the synthesis of new products on the basis of rosin and turpentine. Izv.AN Latv.SSR no.12: 115-117 '63. (MIRA 17:3)



ZANDIN, K.

Training of workers cadres in Cuba. Prof.-tekh. obr. 19 no.9: 30-31 S '62. (MIRA 15:10)

(Cuba—Vocational education)

ZANDIN, K.

What we learn from the experience of the Siberians. Prof.-tekh. obr. 17 no.7:4-5 Jl '60. (MIRA 13:8)

1. Nachal'nik Novosibirskogo oblastnogo upravleniya professional'-notekhnicheskogo obrazovaniya.
(Novosibirsk--Vocational education)

STOZHAROV, A.I.; ZANDIN, N.G.

Wall spectrographs and other optical instruments. Opt.-mekh. prom. 25 no. 2:14-15 F '58. (MIRA 11:7)

(Spectrograph)
(Optical instruments)

ZANIN, Petr Osipovich.

Data for the calculation fo the strength of wooden ships. Moskva, Rechizdat, 1941. 270 p. (49-34456)

VM144.Z3

22455
S/186/60/002/001/005/022
A057/A129

21.3100

AUTHORS: Vdovenko, V.M.; Stroganov, Ye.V.; Sokolov, A.P.; Zaydin, V.N. Deceased

TITLE: The structure of the hexahydrate of uranyl nitrate

PERIODICAL: Radiokhimiya, v. 2, no. 1, 1960, 24 - 31

TEXT: Using the method of Fourier series the authors determined the position of the uranium particles in the crystal of uranyl nitrate hexahydrate from x-ray data and suggest a model of the crystal structure. This structure is important for extraction of uranyl complexes, because crystal solvates are very similar to solvated ions [Ref. 1: Ye. V. Stroganov, S.N. Andreyev, N.I. Kozhina, Vest. LGU, 10, 2, 109 (1958)]. On the other hand structural data are of interest for the classification of this important group of complexes, and until the beginning of the present investigations the structure of uranyl nitrate hexahydrate was not determined. L. Pauling and R.G. Dickinson [Ref. 4: J. Am. Chem. Soc., 46, 1615 (1924)] assumed space-group symmetry D_{2h}^{17} - Cmcm with uranium in position (c), and y = 0.130. Making allowance for the principle developed by R. Kern et al. [Ref. 6: Bull. Soc. fr. min. et crist., 81, 4, 103 (1958)] the present au-

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The structure of the hexahydrate of uranyl nitrate

thors determined a space-group C_{2v}^{12} - Cmc (y = 0.130, z = 0) with a quadruple regulated system of positions (a) for the uranium particles. The same space-group was discovered already in 1957 by K. Sasvári [Ref. 7: Acta Geologica Acad. Sci. Hung., 4, 3, 467 (1957)] by means of a piezoelectric effect. In the present experiments yellow-green uranyl nitrate hexahydrate crystals were used with the crystal form presented in Figure 1. The x-ray diffraction data were obtained from Laue or Weissenburg diffraction patterns and oscillation photographs. The structural data correspond to those obtained by Sasvári (see Table 1). By preparing the diffraction patterns using Fourier series and calculating the electron density, coordinates for all particles were determined. From the obtained values a projection of electron-density in the planes XY and XZ was plotted (Fig. 4). Uranium particles have a 7,000 maximum (see Fig. 4), while the 1,500 maxima correspond to the water molecules, and the 1,800 maxima (in XZ plane) are due to oxygen of the uranyl group. From the difference between the Fourier series and electron density projections (Fig. 4c) the accurate distance between the uranium particle and oxygen (in the uranyl group) was determined as 1.90 ± 0.13 Å. The maxima ~500 (Fig. 4c) and ~1,000 (Fig. 4a) correspond to the oxygen of the NO_3^- groups. The approximate coordinates are given in Table 2. The present results indicate that the hexahydrate of uranyl nitrate represents an ion compound compos-

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The structure of the hexahydrate of uranyl nitrate

ed of aqua-complex cations $[UO_2(H_2O)_6]^{2+}$ and NO_3^- anions. Thus the chemical formula should read $[UO_2(H_2O)_6](NO_3)_2$. The oxygen atoms of the nitrate group are in the vertex of an equilateral triangle (side length 2.66 Å). In the basis of the complex $[UO_2(H_2O)_6]^{2+}$ ions there is a linear uranyl group. The distance uranium - oxygen is here 1.90 Å. Two possibilities for the distribution of the water molecules are studied by the present authors. First variant: According to the data of Fourier series and table 2 the maxima of the electron density indicate that the water molecules 2, 3, 5 and 6 (Fig. 5) lie in a plane parallel to the equatorial plane at a distance of 0.3 Å, while the water molecules 1 and 4 are in an equal plane on the opposite side of the equator. The distance between 2 - 3 and 5 - 6 is 2.82 Å and between 1 - 2, 3 - 4, 4 - 5, and 6 - 1 it is 1.90 Å. The second, idealized, variant: This distribution is represented by the rotation of the water molecules 2, 3, 5 and 6 around the uranyl axis, assuming an equal distance of 2.30 Å between the water molecules. The fact that this distance is smaller than the radii of two water molecules (= 2.66 Å) can be explained by the strong deformation of the water molecule caused by the uranium field and formation of bonds between the molecules. Both proposed distribution variants are similar to the structure of uranyl aqua-complexes presented by I.I. Lipilina and O.Ya. Samoylov [Ref. 10: DAN SSSR, 98, 1, 99 (1954); Ref. 12: DAN SSSR, 122, 2,

Card 3/10

The structure of the hexahydrate of uranyl nitrate

238 (1958)]. Equatorial distribution of particles around the uranyl ion was observed in other uranyl complexes by W.H. Zachariasen [Ref. 8: Acta Cristallogr., 7, 795 (1954)]. The NO_3^- ions form a reticulated layer parallel to the XY plane, while the $[UO_2(H_2O)_6]^{2+}$ cations form linear chains parallel to the Z axis. The axial directions of the uranyl groups are in a plane parallel to YZ under an angle of ~37° to the Y axis. Each $[UO_2(H_2O)_6]^{2+}$ cation is surrounded by 12 NO_3^- ions and 6 cations have one anion in common. The distance between the uranium atom and the water molecule in the aqua-complex cation was determined as 2.2 Å. Calculations of the spherical volume give a value for the packing coefficient of $K_{spherical} = 46.5\%$. Thus it is very likely that heating of the crystal causes rotation of the NO_3^- groups, and the following revolution around the axis vertical to the triangle (formed by this group). There are 5 figures, 2 tables and 12 references: 4 Soviet-bloc and 8 non-Soviet-bloc.

SUBMITTED: July 2, 1959

Card 4/10

GRUSZKA, Stanislaw; ZANDLER-KOSZELNIK, Bogumil; ZUKOWSKI, Wojciech

Data to the pathogenesis of the Löfgren syndrome. Pol. tyg. lek. 20 no.8:283-285 22 F'65.

1. Z II Kliniki Chorob Wewnetrznych Akademii Medycznej we Wroclawiu (kierownik: prof. dr. med. Antoni Falkiewicz).

ZANDOR, Z.

HUNG.

31. Preparation of chemically pure zein — Z. Sándor and A. Aszalós. (*Magyar Kémiai Folyóirat* — Vol. 60, 1954, No. 5, pp. 143—144)

Zein was extracted with 70% alcohol from dehydrated gluten mud produced in maize starch factories. The ethanol solution resulting from the batchwise extraction procedure at 60° C was filtered after cooling below 15° C and the contaminants extracted with hexane. Zein was precipitated from this ethanol solution with water at *p*H 6.2 and the substance obtained was dried in a vacuum for 1 to 5 hours. Zein thus produced is soluble in cold ethanol and its ash content is 0.1%. Its molecular weight established by ultracentrifuging is 30,000 (±2,000), and the length-*vs*.-diameter ratio of the molecule is 15 to 1. The diffusion constant of the compound was found to be 3.1 · 10⁻⁷ cm²/sec.

ZANDT, V.Ye.

Boiling-type reactors and possibility of their use. Mor. sbor. 48 no.11:66-72 N '64. (MIRA 18:1)

ZAMIL'YAK, P.A.

Connection between the teaching of botany and zoology and agriculture. Est.v shkole no.1:55-57 Ja-F '56. (MLRA 9:5)

1. Do 1955/56 uchebnogo goda by uchitelem biologii Mol'nitskoy semiletney shkoly Gertsayevskogo rayona Chernovitskoy oblasti, na uchebno-opytnom uchastke kotoroy on razvernul interesnuyu uchebno-opytnuyu rabotu. V nastoyashcheye vremya predsedatel' mestnogo kolkhoza.
(Botany--Study and teaching)(Zoology-Study and teaching)
(Agriculture)

ZANEA, M. ; RECKNAGEL, M.

Purification of the feed water for steam boilers. p. 427.
(INDUSTRIA LEMNULUI. RUMANIA. Vol. 5, no. 9, Sept. 1956.)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 7, July 1957. Uncl.

ZANEA, M.

Control of electric power losses by using transmissions. p. 492.
(INDUSTRIA LEMNULUI. RUMANIA. Vol. 5, no. 11, Nov. 1956.)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 7, July 1957. Uncl.

ZANECHENKO, V.A.

VESELOV, I.Ya.; ZANECHENKO, V.A.

Removal of volatile reducting substances during barley malting. (MLRA 10:1)
Trudy VNIIPP no.4:106-107 '54.
(Barley) (Reduction, Chemical) (Brewing)

U TSZYAN [Wu Chiang]; BATALOV, E.Ya. [translator]; VOYEVODIN, S.A. [translator]; ZANEGIN, B.N. [translator]; ZHAMIN, V.A., red.; TUZHUKHAMEDOV, R.A., red.; RYBKINA, V.P., tekhn.red.

[Problems of transforming capitalist industry and commerce in the Chinese People's Republic] Voprosy preobrazovaniia kapitalisticheskoi promyshlennosti i torgovli v KNR. Obshchaia red. i predisl. V.A.Zhamina. Moskva, Izd-vo inostr.lit-ry, 1960. 574 p. Translated from the Chinese. (MIRA 13:7)

(China--Industries) (China--Commerce)

30(5)
AUTHOR: Zanegin, B. N.

SOV/30-58-12-36/46

TITLE: 9 Years of the Chinese National Republic (9 let Kitayskoy Narodnoy Respubliki) The Jubilee Session at the Institute of Sinology (Yubileynoye zasedaniye v Institute kitayevedeniya)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 12, pp 89 - 92 (USSR)

ABSTRACT: A conference of the scientific council of the Institute of Sinology of the AS USSR took place on September 29, at which the representatives of the embassy of the Chinese National Republic (KNR) to Moscow Chang Yin-wu and Kung T'ing were present. Besides the members of the Institute of Sinology the following persons took part in it: Scientists of the Institut vostochnykh yazykov Moskovskogo universiteta (Institute of Oriental Languages of the Moscow University), the Institut filosofii Akademii nauk SSSR (Philosophical Institute AS USSR), professors of the Moskovskiy institut mezhdunarodnykh otnosheniy (Moscow Institute of International Relations), men who

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9 Years of the Chinese National Republic. The Jubilee Session at the Institute of Sinology SOV/30-58-12-36/46

Chinese National Republic reported on the success of the Chinese people in the economic field. At the end, the director of the Institute of Sinology A.S.Perevertaylo described the scientific activities of the Institute, which are carried out in close contact with the scientists of the Chinese National Republic. At present, the Chinese scientists Hsü Ti-Hsin, and Hu Hou-hsüan are working at the Institute. The arrival of the professors Liu Ta-nien, Hou Wai-lu, and Lu Chi-wei, He Chia-huaf is expected.

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DMITRIYEVSKIY, K.I., master-vzryvnik; BYCHKOV, F.; NIKITIN, L., inzh.; VORKHLIK, M., inzh.; TYUTRIN, V., inzh.; YUDINA, N.F., inzh.; ZANEGIN, G., inzh.

Editor's mail. Bezop. truda v prom. 5 no.8:34 Ag '61. (MIRA 14:8)

1. Shakhta No.32, Stalinskaya oblast' (for Dmitriyevskiy). 2. Sherlovogorskiy gornoobogatitel'nyy kombinat, Chitinskaya oblast' (for Nikitin, Vorkhlik, Tyutrin). 3. Otdel tekhniki bezopasnosti Nizhne-Tagil'skogo metallurgicheskogo kombinata imeni V.I. Lenina (for Yudina). 4. Tekhnicheskiy otdel tresta Dorogobuzhshakhtostroy (for Zanegin).

(Mining engineering--Safety measures)

ZANEGIN, G.I., general-mayor inzhenerno-tekhnicheskoy sluzhby

Independent work of students. Vest. protivovozd. obor. no.11: 64-67 N '61. (MIRA 16:10)

(Military education)

TERSKIKH, V.I.; CHERNUKHA, Yu.G.; KOKOVIN, I.L.; KUZ'MINA, R.M.; PRUDNIKOVA, M.N.; SORINA, A.M.; ZANEGINA, P.T.

Regional epidemiology of leptospiroses in Smolensk Province. Zhur. mikrobiol. epid. i immun. 31 no.7:123-127 Jl '60. (MIRA 13:9)

1. Iz Instituta epidemiologii i mikrobiologii im. Gamalei AMN SSSR i Smolenskoy oblastnoy sanitarno-epidemiologicheskoy stantsii.
(SMOLENSK PROVINCE—LEPTOSPIROSIS)

ZAHEMONETS, N.A.; FOGEL', V.O.

Thermal and physical properties and thermal effects of the vulcanization reaction of ebonite mixtures from butadiene-styrene rubbers. Kauch. i rez. 18 no.2:21-24 F '59.
(MIRA 12:4)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

(Rubber--Thermal properties)
(Vulcanization)

KOSHELEV, F.F.; ZANEMONETS, N.A.

Dependence of the thermal effects of the vulcanization of natural and synthetic rubbers upon the proportioning of sulfur, on temperature and the type of accelerator used. Kauch.i rez. 20 no.7:15-18 Jl '61. (MIRA 14:6)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.Lomonosova.
(Vulcanization) (Rubber—Testing)

27937 S/138/61/000/007/003/007
A051/A129

15.9120
11.2320

AUTHORS: Koshelev, F.F.; Zanemonets, N.A.

TITLE: Relationship of the thermal effects of vulcanization of natural and synthetic rubbers to the sulfur content, temperature and accelerator type

PERIODICAL: Kauchuk i rezina, no. 7, 1961, 15 - 18

TEXT: The present article deals with the results obtained in an investigation of the thermal effects in natural rubber, CKMC-50 (SKMS-50) and CKC-30A (SKS-30A), depending on the sulfur content (to 100 w.p. of rubber), accelerator and temperature. The general thermal effect of the vulcanization reaction was computed from the formula:

$$q_{sum} = \frac{q_v^{aver.} (\tau_n - \tau_o)}{\gamma}, \quad (1)$$

where $q_v^{aver.}$ is the average intensity of heat formation in kcal/m^3 · h; τ_n - time from the beginning of heating, corresponding to the calculated moment n; τ_o - time, corresponding to the beginning of vulcanization; γ - specific gravity of the mixture, kg/m^3. The heat conductivity coefficients $q_v^{aver.}$ were determined

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in stationary thermal conditions and the temperature-conducting coefficients in regular ones. The volumetric heat capacity was calculated from the formula: $c\gamma = \frac{\lambda}{a}$ (2). The results of the experimental determination of the sum of thermal effects of the vulcanization with an accelerator and with 30 w.p. of sulfur (temperature 150°C) are given as:

Type of rubber	q_{sum}, kcal/kg mixture
NR	74.5
SKMS-50	52.6
SKS-30A	73.8

The data show that the sum of the thermal effects of the vulcanization reaction of mixtures based on natural and butadiene-styrene rubbers are both about equal. The presence of the methyl group in the rubber lowers the thermal effect of the vulcanization. Results of the computation of the sum of the thermal effects of vulcanization for mixtures based on natural rubber and SKS-30A with various sulfur contents are given in Table 2. The data show that with an increase in the sulfur content in the mixture the thermal effect increases and also the intensity of the heat formation q_v. The authors further investigated the effect of the type of the accelerator on the kinetics of heat formation and the sum of the ther-

Relationship of the thermal effects of....

mal effects of the vulcanization reaction of the mixtures. The introduction of an accelerator into the mixture based on SKMS-50 increases the intensity of the heat formation. The new method, called the method of thermographical balances, was checked. The effect of vulcanization temperature on the kinetics of heat formation and on the sum of thermal effects of the vulcanization reaction was also investigated. An increase in the vulcanization temperature decreases the duration of the vulcanization and elevates the intensity of heat emission. The following conclusions are drawn: The mixtures based on NR and SKS-30A which were investigated have the same vulcanization thermal effect values. The thermal effect of vulcanization of methyl-styrene SKMS-50 rubber is much lower. Thus, the presence of a methyl group in the benzene ring reduces the thermal effect of the vulcanization. The thermal effect increases with the sulfur content in the raw mixture. The mixtures containing DFG, thiuram and MgO as accelerators, and mixtures without accelerators, have the same thermal effect of vulcanization. A mixture containing BT sulfenamide is characterized by a higher value of the thermal effect than the same mixture without an accelerator; captax lowers the value of Q_{sum}. A method is recommended for vulcanization of mixtures with a low sulfur content based on the equality of the thermal effect of the rubber vulcanization without an accelerator and with certain accelerators. This method is also applic-

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able to determining the thermal effects at low temperatures of vulcanization (120 - 140°C). The thermal effect increases with an increase in the temperature. There are 5 figures, 4 tables and 2 Soviet-bloc references.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova (Moscow Institute of Fine Chemical Technology im. M.V. Lomonosov)

ZAHEMONETS, M.A.; FOGEL', V.O.

New method of determining the thermal effects produced by the vulcanization reaction of rubbers. Izv.vys.ucheb.zav.;khim. i khim.tekh. 2 no.3:437-442 '59. (MIRA 13:8)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova, kafedra teplotekhniki.
(Rubber--Thermal properties) (Vulcanization)

5(4) SOV/153-2-3-24/29

AUTHORS: Zanemonets, N. A., Fogel', V. O.

TITLE: A New Method of Determining the Thermal Effect of the Reaction of Rubber Vulcanization

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 3, pp 437-442 (USSR)

ABSTRACT: The new method developed by the authors is based on the determination of the heat balances from the results of thermographic analyses (method of thermographic balances). The differential equation for the heat conduction can be written down by taking into account the inner sources of heat in the following form (Ref 6):

$$\frac{\partial t}{\partial \tau} = \frac{\lambda}{c\gamma}\Delta^2 + \frac{q_v}{c\gamma} \quad (2).$$

t denotes the temperature in the point observed, τ the duration of heating,

$$\Delta^2 t = \frac{\partial^2 t}{\partial x^2} + \frac{\partial^2 t}{\partial y^2} + \frac{\partial^2 t}{\partial z^2}$$

the Laplace operator, q_v the thermal energy of the inner heat sources with respect to the units of volume and time, λ thermal conductivity of the material and $c\gamma$ its thermal capacity by volume. From this the following equation is obtained for the desired development of heat (intensity of the thermal effect of the reaction):

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A New Method of Determining the Thermal Effect of the Reaction of Rubber Vulcanization

$$q_v = -\lambda \Delta^2 t + c\gamma \frac{\partial t}{\partial \tau} = q_\lambda + q_{ak} \left[\frac{\text{kcal}}{\text{m}^3.\text{time}}\right] \quad (3)$$

($q_\lambda = -\lambda \Delta^2 t$ .... amount of heat flowing thru the thermal conduction during unit time from the unit volume; $q_{ak} = c\gamma \frac{\partial t}{\partial \tau}$ ... amount of heat which accumulates during the unit period in the unit volume). On the basis of the investigations carried out by the authors the temperature distribution in thin symmetrical heated plates of the rubber sample corresponds to the following formula:

$$t = t_c + (t_c + t_w) \left(\frac{x}{\delta}\right)^2 \quad (5)$$

(t_c ... temperature of the center of the plate, t_w ... temperature of the surface, x .... distance of the point observed from the center of the plate, δ ... half thickness of the plate). The amount of heat q_λ emitted due to the conduction of heat is the following for such a plate:

$$q_\lambda = -\lambda \frac{\partial^2 t}{\partial x^2} = \frac{2\lambda(t_c - t_w)}{\delta^2} = \frac{2\lambda \Delta t}{\delta^2} \left[\frac{\text{kcal}}{\text{m}^3.\text{time}}\right] \quad (6)$$

. The mean

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A New Method of Determining the Thermal Effect of the Reaction of Rubber Vulcanization

temperature of the plate may be computed from the following equation: $t_m = \frac{1}{\delta}\int_0^{\delta} t\,dx = \frac{2t_c + t_w}{3} = t_c - \frac{\Delta t}{3}$ (7). ($\Delta t = t_c - t_w$ .... temperature drop in the plate). From this the intensity of the heat accumulation q_{ak} in the plate may be computed:

$$q_{ak} = c\gamma \frac{\partial t_m}{\partial \tau} \left[\frac{kcal}{m^3 . time}\right]$$ (8), and the thermal energy of the heat sources at the moment concerned, which in this case is characterized by the intensity of the thermal effect in the vulcanization, may be determined from equation (3). The authors tested this method in the investigation of the thermal effect of the vulcanization reaction of ebonites from butadiene styrene rubbers. Satisfactory results were obtained. The apparatus used for the determination of the thermal effects is schematically represented and exactly described. Figure 4 shows one of the thermograms obtained. The method elaborated is suited for investigating the kinetics of the heat formation and for determining the initial data for the computation of the thermal effect of the vulcanization process of rubber. There are 5 figures

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A New Method of Determining the Thermal Effect of the Reaction of Rubber Vulcanization

and 8 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova
(Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov).
Kafedra teplotekhnika (Chair of Thermal Engineering)

SUBMITTED: June 24, 1958

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AUTHORS: Zanemonets, N. A. and Fogel', V. O. 30V/138-59-2-/24

TITLE: The Thermo-Physical Characteristics and Thermal Effects of Vulcanization of Hard Rubber Mixtures Prepared from Butadiene-Styrene Rubbers (Teplofizicheskiye kharakteristiki i teplovyye effekty reaktsii vulkanizatsii ebonitovykh smesey iz butadiyen-stirol'nykh kauchukov)

PERIODICAL: Kauchuk i rezina, 1959, Nr 2, pp 21-24 (USSR)

ABSTRACT: Experiments were carried out on the thermal conductivity of SKS hard rubber mixtures and the thermal effects of mixtures containing 6 to 53% weight of sulphur to 100% weight rubber determined. The samples were prepared in the Laboratoriya ebonita (Laboratory for Hard Rubber) of the NIIRP and the percentage of free sulphur determined in the samples after vulcanization. The thermo-physical characteristics of the samples were defined before and after vulcanization in the temperature limit between 20° and 100 to 150°C in the apparatus shown in Fig 1. The samples consisted of two foils (thickness 4 mm, width and length 40 mm) with a flat electric heater between them.

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The Thermo-Physical Characteristics and Thermal Effects of Vulcanization of Hard Rubber Mixtures Prepared from Butadiene-Styrene Rubbers

They were placed in an ultra-thermostat where they were kept at a constant temperature (± 0.05°C). A formula is given for calculating the coefficient of heat conductivity of the samples. The composition of six tested samples is given in Table 1. The graph in Fig 2 indicates that the heat conductivity of the samples SKS-10 and SKS-30 decreases with increasing temperature, remains practically constant in the case of the sample SKS-50, and increases with increasing temperature in the samples SKS-60 and SKS-90. Addition of the accelerator diphenyl guanidine causes a decrease in the coefficient of heat conductivity of the mix with increasing temperature. After vulcanization the heat conductivity in most samples, at 153°C, was 6 to 18% higher than it was in the raw mix at the same temperature. The temperature conductivity of the same samples was found to be decreasing with the rise of temperature (Fig 3). An analogous decrease of the temperature conductivity

 was also found when investigating the thermo-physical

SOV/138-59-2-7/24

The Thermo-Physical Characteristics and Thermal Effects of Vulcanization of Hard Rubber Mixtures Prepared from Butadiene-Styrene Rubbers

characteristics of tyre mixtures. The thermal effects of the vulcanization process of hard butadiene-styrene rubber mixtures were determined by a method proposed by the authors which is based on the theory of heat conductivity of thermograms obtained during the vulcanization process. An equation for calculating the total thermal effect is given. Fig 4: a thermogram of an SKS-30 sample; Table 2: the thermo-physical characteristics of the tested samples at a temperature of 150°C. The intensity of the thermal effect of these samples was calculated and is shown in the form of a graph (Fig 5). The maximum thermal effect occurs in these mixtures 4 to 5 hours after the commencement of heating and was higher for those samples which had an increased number of double bonds. The thermal effect was observed to increase sharply when adding an accelerator to the mixture. Results of calculations of the thermal effects of vulcanization are given in Table 3

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and Fig 6. At an equal percentage content of bound sulphur the thermal effects of the vulcanization of hard butadiene-styrene rubbers are much lower than for natural rubber (about 3 times lower than data given by J. T. Blake - Ref 3, and 25% lower than values quoted by R. S. Jessup and A. D. Cummings - Ref 4). There are 6 figures, 3 tables and 4 references, 2 of which are Soviet, 2 English.

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